

The Examiner has rejected claim 8 under 35 USC 102 as being anticipated by Spittle, 5,916,027. The Examiner states that Spittle discloses a mulch product comprising NPK fortifiers and paper fibers.

Claim 8 teaches an agglomerated/granulated mulch product. Spittle does not disclose an agglomerated/granulated mulch product. Spittle discloses a pressure compression extrusion product as shown in Col. 3 lines 18-27. Spittle discloses ~~mulch~~ <sup>44,118</sup> flakes made by shredding newspaper and processing it through a hammer <sup>mill</sup> ~~mill~~ <sup>MAIL ROOMS</sup>. The resulting paper pieces are then introduced into a finish hammer mill. Also added to the finish hammer mill is the appropriate amount of sawdust. The paper pieces about  $\frac{1}{4}$  to  $\frac{3}{4}$  inch in length and the sawdust sized to pass through a 20 mesh screen. The mixture exiting the finish hammer mill has added to it the correct amount of marker dye, liquid surfactant and water absorbing polymer, if desired. Granular fertilizer is then added if desired. These are all dry ingredients.

The entire mixture is then processed through a conditioner, in which the correct amount of moisture is sprayed into the mixture as a fine mist as the product is agitated. The mixture is then pelletized into pellets of 3/16 inch diameter, with a length of about 1-1 1/4 inches. This is a compression extrusion technique like play dough. The product is then cooled, to harden and dry the outside skin, to prevent mold growth, and keep the pellets from breaking apart. The pellets are then granulated into flakes. The mulch flakes produced during this process are 1/16 to 3/8 inches in the longest dimension and are up to 1/8 inch thick at most. This is a shearing process. The present invention specifically describes a product made by an agglomeration/granulation process.

*adding  
adding  
drying*

Enclosed are publications which illustrate the difference between the method of the present invention and the methods shown in the prior art references. These publications are Table 8-52 from the notes from "Briquetting, Pelletizing, Extrusion of Fluid Bed/Spray Granulation" April 1998, "Perry's Chemical Engineers Handbook", which shows the same table, and "Briquetting, Pelletizing, Extrusion of Fluid Bed/Spray Granulation" 1995. The publications describe the difference between a tumbling and mixer agglomeration, which is described in the patent application and the pressure compaction method described in Spittle. The publications also show a difference in equipment that is used for these processes.

Claim 8, requires the mulch product to be an agglomerated/granulated mulch product. The agglomeration/granulation process of the present invention is described as taking a moist fiber based product and impregnating it with NPK in a mixer. The NPK can be added before or after entry into the mixer. The mixer performs the work of creating an agglomerated or granulated product that is a homogenous blend of paper product and NPK. This product is then dried to a desired level of moisture. A binding agent can be added to the mixer to enhance agglomeration/granulation process. The mixers described in the specification are pin mixer, pan pelletizer, paddle mixer, drum granulator or other type of mixer. A double helix pin arrangement is preferred. Sewage sludge can be used to create the fortified mulch rather than paper fibers. There is an example in the application which shows how the pin mixer imparts agitation forces on the material and sprayed liquid binder. This causes a tumbling, turbulent movement resulting in an agglomeration/granulation product.

The Examiner has rejected claims 1-6 and 8 under 35 USC 103 as being obvious over Spittle in view of Morgan, 6,029,395. For claims 1,3,6 and 8, the Examiner states that Spittle discloses a method for creating mulch comprising the steps of adding paper fibers to a mixer; adding NPK fortifiers before the mixer; and drying contents of the mixer. However, the Examiner states that Spittle is silent about using a pin mixer, paddle mixer, and a binding agent. The Examiner states that it would have been obvious to use any type of mixer such as a pin mixer or a paddle mixer to mix the mulch of Spittle depending on the cost and how well one wishes to blend the mulch mixture together for the intended use.

Spittle in view of Morgan does not teach an agglomeration/granulation process.  
Each of the claims of the present application relates to an agglomeration/granulation process. As stated above, Spittle describes a compression extrusion technique. Morgan describes producing a slurry. Neither of these references teach the method which is described in the patent application.

The Examiner states that Morgan teaches a mulch making method employing a binding agent in the mulch mix to hold other elements, such as paper fibers and granules in the mix together. The Examiner states that it would have been obvious to use a binding agent as taught by Morgan in the mulch mix of Spittle to hold the elements in the mix together.

Morgan relates to a biodegradable mulch mat comprising an air and water permeable, light impermeable, open celled composite of granules and fibers in a binder matrix prepared from a foam precursor. Useful binders include polysaccharides, glycosides, vegetable gums, vinyl polymers, waxes and crosslinkable oils. Useful

surfactants include saponins and amine surfactants. Slurries of fibers, granules, binder and surfactant are gas entrained, e.g., by whipping, to provide a foam which is applied to soil around seedlings, the foams dry to a durable, biodegradable mulch mat.

For claim 2, the Examiner states that Spittle as modified by Morgan discloses the mulch mix are pelletized into pellets, but are silent about using a pan pelletizer. The Examiner states that it would have been an obvious matter of choice to use any type of pelletizer such as a pan pelletizer to create the pellets of Spittle as modified by Morgan depending on the cost and the pellet size of the intended use. As stated above this is not a matter of choice. The process of the present invention relates to an agglomeration/granulation process not described by Spittle as modified by Morgan.

For claim 4, the Examiner states that Spittle as modified by Morgan discloses the pellets are then granulated into flakes by using known granulation equipment, but are silent about using a drum granulator. The examiner states that it would have been an obvious matter of choice to use any type of granulation equipment such as a drum granulator to create the flakes of Spittle as modified by Morgan depending on the cost and the flake size of the intended use. As stated above this is not a matter of choice. The process of the present invention relates to an agglomeration/granulation process not described by Spittle as modified by Morgan. As shown in the attached publications, once one chooses a method, there is only specific type of equipment which will create the desired product.

For claim 5, the Examiner states that Spittle as modified by Morgan are silent about employing a pin mixer having a double mixer arrangement. The Examiner states that it would have been an obvious matter of choice to use any type of mixer such as a

pin mixer with a double helix pin arrangement to mix the mulch of Spittle as modified by Morgan depending on the cost and how one wished to blend the mulch mixture together for the intended use. As stated above this is not a matter of choice. The process of the present invention relates to an agglomeration/granulation process not described by Spittle as modified by Morgan.

The Examiner rejected claim 7 under 35 USC 103 as being obvious over Spittle as modified by Morgan as applied to claim 1 above, and further in view of Decker, 5,806,445. Spittle as modified by Morgan are silent about using sewage sludge in place of paper fibers. Decker teaches in col. 2 lines 10-13, that sewage sludge is proven to be very effective mulch media because it is plentiful, inexpensive, easy to handle and rich in nutrients. The Examiner states it would have been obvious to substitute sewage sludge as taught by Decker for paper fibers of Spittle as modified by Morgan in order to reduce cost and ease of handling.

Decker relates to a liquid mulch apparatus for the production of thin lightweight and fastly growing sod over an impervious surface such as plastic sheeting. The apparatus includes a transportable agitating tank and a trailing planter assembly. Decker describes sewage sludge as a material to be used to grow grass sod over a root impervious surface. Decker teaches sewer sludge as a growing media to be added to the mulch. It does not teach making a mulch out of sewage sludge.

The present application relates to a composition and method for making a fortified mulch with fertilizers using an agglomeration/granulation process. The combination of Spittle modified by Morgan in view of Decker does not teach an agglomeration/granulation method.

Applicant believes that the application is now in condition for allowance.

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Respectfully submitted,



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1. An agglomeration/granulation method for creating a fortified mulch comprising;  
adding paper fibers to a pin mixer;  
adding <sup>, nitrogen, phosphorous and potassium</sup> ~~NPK~~ fortifiers and a binding agent before or at said mixer;  
drying contents of said mixer.
2. The method of claim 1 wherein the pin mixer is replaced with a pan pelletizer.
3. The method of claim 1 wherein the pin mixer is replaced with a paddle mixer.
4. The method of claim 1 wherein the pin mixer is replaced with a drum granulator.
5. The method of claim 1 wherein said pin mixer has a double helix pin arrangement.
6. The method of claim 1 wherein said paper fibers are comprised of a by-product of a paper making process.
7. The method of claim 1 wherein said paper fibers are replaced with sewage sludge.
8. An agglomerated/granulated mulch product that is comprised of ~~NPK~~ fortifiers and paper fibers.  
<sup>1</sup>  
<sup>nitrogen,</sup>  
<sup>phosphorous and</sup>  
<sup>potassium</sup>

*Sub B1*

*Sub B2*

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1. An agglomeration/granulation method for creating a fortified mulch comprising;
  - adding paper fibers to a pin mixer;
  - adding nitrogen, phosphorous and potassium fortifiers and a binding agent before or at said mixture;
  - drying contents of said mixer.
2. The method of claim 1 wherein the pin mixer is replaced with a pan pelletizer.
3. The method of claim 1 wherein the pin mixture is replaced with a paddle mixer.
4. The method of claim 1 wherein the pin mixer is replaced with a drum granulator.
5. The method of claim 1 wherein said pin mixer has a double helix pin arrangement.
6. The method of claim 1 wherein said paper fibers are comprised of a by-product of a paper making process.
7. The method of claim 1 wherein said paper fibers are replaced with sewage sludge.
8. An agglomerated/granulated mulch product that is comprised of nitrogen, phosphorous and potassium fortifiers and paper fibers.